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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,011	06/20/2003	Stephen E. Greco	FIS920030144US1	1010

23550 7590 12/28/2005

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EXAMINER

CHACKO DAVIS, DABORAH

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 12/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/604,011

Applicant(s)

GRECO, STEPHEN E.

Examiner

Daborah Chacko-Davis

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4, 7-30, are rejected under 35 U.S.C. 102(e) as being anticipated by U. S. Patent No. 6,498,385 (Daubenspeck et al, hereinafter referred to as Daubenspeck).

Daubenspeck, in col 7, lines 16-67, in col 8, lines 1-67, in col 10, lines 23-50, discloses a method of opening an integrated circuit (deleting the fuse in the circuit device) comprising lithographically patterning the resist layer (exposing, and developing the exposed resist) formed on the integrated circuit structure (IC chip) to form an opening in the resist, etching the underlying exposed barrier layer on the fuse element, the fuse is coupled to a plurality of terminals (landed on a upper surface of the wire/fuse element, see figure 1F) and is the (non-last metal layer (LM-1 layer), etching the exposed fuse (exposed through the patterned resist) by wet etching using acid and water, stripping the remaining resist (claims 1-4, and 11-12, 19, 23, and 26).

Daubenspeck, in col 10, lines 53-67, in col 11, lines 1-22, discloses that the opening in the structure includes an opening to each side of the terminal (copper) (see figure 1G), wet etching the fuse elements leaves behind the metal liner segments of the terminal

Art Unit: 1756

intact, but removes the fuse (copper segments, therefore removing the contact of the liner) (see figures 7A through 7D) (claims 7-8, 10, 14, 16, 21, and 30) Daubenspeck, in col 10, lines 24-67, discloses that the fuse includes a wire and the terminals are positioned (fully-landed) on the fuse wire (copper) (see figure 1G), wherein each terminal includes a Ta or TaN liner, each terminal comprises a horizontal wire and a vertical stud (see figure 1G, reference 114a) said fuse wire couples the vertical studs, and the horizontal wire couples the fuse to the terminals (claims 9, 13, 15, 17-18, 20, 22, 24-25, and 27-29).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 6,498,385 (Daubenspeck et al., hereinafter referred to as Daubenspeck) in view of U. S. Patent No. 5,953,577 (Huggins).

Daubenspeck is discussed in paragraph no. 2.

The difference between the claims and Daubenspeck is that Daubenspeck does not disclose that the opening is formed by applying a polymer and ablating the polymer with a laser to define the at least one opening (claim 5).

Huggins, in col 7, lines 25-40, discloses the use of laser ablation methods to form

an opening in the polymer formed on the structure.

Therefore, it would be obvious to a skilled artisan to modify Daubenspeck by employing the laser ablation techniques suggested by Huggins because Huggins, in col 7, lines 25-34, discloses that such techniques enables the use of non-precision masks during exposure, and enables positioning of the mask at desired and selected portions of the resist polymer for removal by laser ablation.

Response to Arguments

5. Applicant's arguments filed September 22, 2005, have been fully considered but they are not persuasive. The 102 and 103 rejections made in the previous office action (paper no. 0623) are maintained.

A) Applicants argue that Daubenspeck does not teach that the fuse element is located at the non-last metal layer, and that the opened fuse line includes a liner

Daubenspeck, in col 3, lines 46-67, in col 4, lines 1-15, discloses forming the fuse element in the copper layer, lithographically forming openings in the copper layer, said fuse can be a portion of the laminate TaN/Ta/Cu line, wherein the fuse is located in the copper layer, and the TaN/Ta structure is a liner, and therefore the fuse is in a non-last metal layer (the copper layer is formed on the liner, the fuse element includes a liner). Additionally, the instant application illustrates the fuse element (reference 16) and the liner (reference 17) as the one and the same, and is similar to the structure illustrated by Daubenspeck.

Art Unit: 1756

B) Applicants argue that Daubenspeck does not disclose wet etching the fuse element to open the fuse.

Daubenspeck, in col 3, lines 62-66, discloses that one or more openings of the fuse is formed on the copper layer by lithographical patterning, and that the exposed portions of the copper layer is wet etched using aqueous ammonium persulfate.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for

Art Unit: 1756

the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dcd

MD
December 22, 2005.



JOHN A. MCPHERSON
PRIMARY EXAMINER